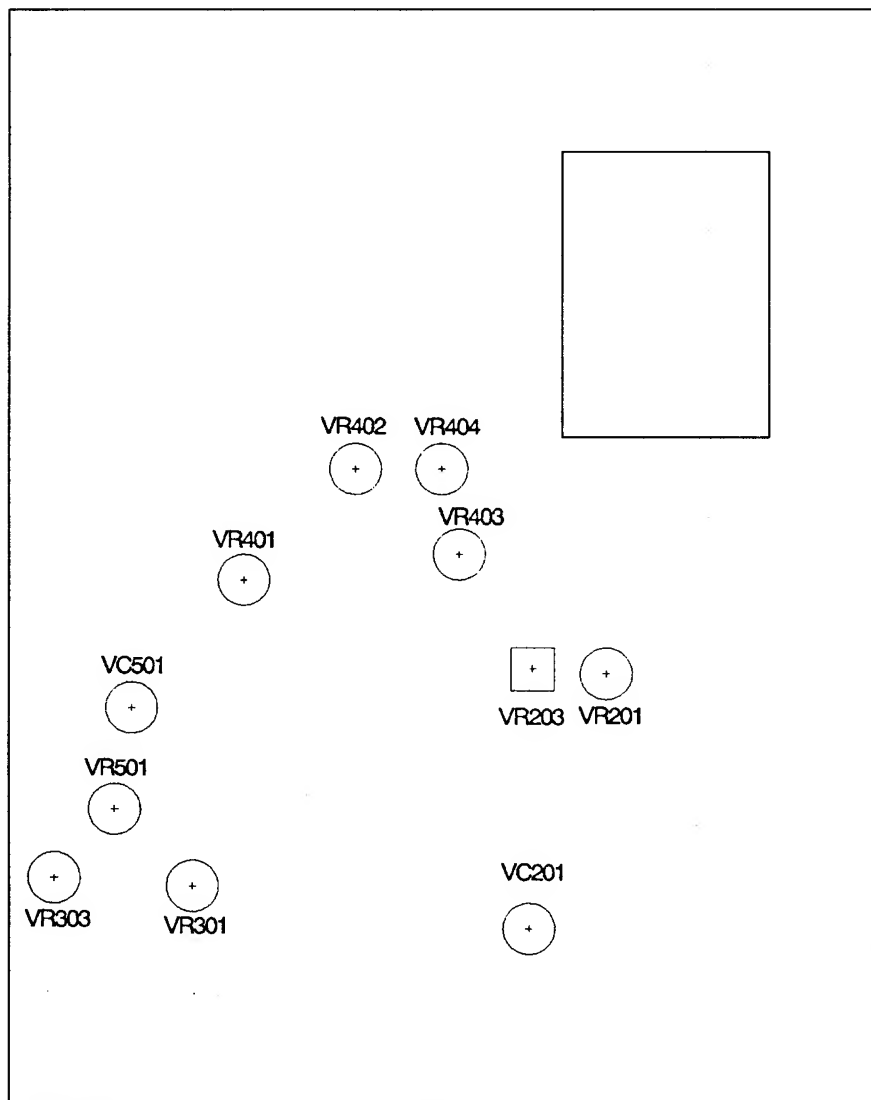


# **CALIBRATION PROCEDURE**

**MODELS 3011, 3011A & 3011B**

**2 MHz  
FUNCTION GENERATOR  
with Digital Display**





FRONT

## CALIBRATION PROCEDURE

Allow a 30 minute warm-up before beginning this procedure. Use a non-metallic tool for all adjustments, and perform them in the order specified. The following test equipment is required:

Standard DMM	50 ohm Termination
Distortion Meter	Oscilloscope

## Cover Removal

1. Unplug the function generator and swing the handle so that it is flat against the top of the case.
2. Turn the unit upside down.
3. Remove the four screws from the bottom of the case.
4. Lift the bottom cover off. Remove the handle and four case separators (cylindrical plastic standoffs) and set aside.

## Square Wave Symmetry Adjustment

1. Depress the 1 k RANGE switch on the 3011 and select the square wave FUNCTION. Turn the DUTY control to CAL (fully counterclockwise), and turn the AMPL control to MAX (fully clockwise). Push in the DUTY, OFFSET ADJ, TTL, and AMPL controls.
2. Adjust FREQUENCY control for approximately 1000 Hz.
3. Connect the OUTPUT of the 3011 to an oscilloscope. Set the oscilloscope to 5V/DIV and .1 mS/DIV.
4. Adjust VR203 for a duty cycle of 49.5% to 50.5%.

## Full Scale Adjustment

1. Set Fine FREQUENCY control to center (3011B only), and set coarse FREQUENCY control to last major increment in clockwise direction.
2. Adjust VR201 for a reading of 1990 to 2010 Hz.
3. Depress the 1M RANGE switch.
4. Adjust VC201 for a reading of 1990 to 2010 kHz.

## Triangle Wave DC Offset Adjustment

1. Depress the 1 k RANGE switch and triangle FUNCTION switch.
2. Pull out AMPL control and set to MIN (fully counterclockwise).
3. Disconnect the OUTPUT of the 3011 from the oscilloscope and connect it to the input of the DMM. Set DMM to read DC Volts.
4. Adjust VR501 for a reading on DMM between -10 mV and +10 mV.

## Sine Wave Distortion Adjustment

1. Depress the Sine FUNCTION switch.
2. Push IN the AMPL control and set to MAX (fully clockwise).
3. Disconnect the OUTPUT of the 3011 from the DMM and connect it to the input of the distortion meter and a 50 ohm terminator.
4. Adjust VR401 and VR403 for less than 0.7% distortion.
5. Remove 50 ohm terminator and recheck distortion.

## Sine Wave Level Adjustment

1. Disconnect the OUTPUT of the 3011 from the distortion meter and connect it to the input of the oscilloscope.
2. Depress Triangle FUNCTION switch and note amplitude of triangle waveform on oscilloscope.
3. Depress sine FUNCTION switch.
4. Adjust VR402 until sine wave amplitude is within  $\pm 1\%$  of triangle wave amplitude.

### **Sine Wave DC Offset Adjustment**

1. Pull OUT the AMPL control and set to MIN (fully counterclockwise).
2. Disconnect the OUTPUT of the 3011 from the oscilloscope and connect it to the input of the DMM.
3. Adjust VR404 for a reading on DMM between -100 mV and 100 mV.

### **Square Wave Level Adjustment**

1. Disconnect the OUTPUT of the 3011 from the DMM and connect it to the input of the oscilloscope.
2. Push in AMPL control and set to MAX (fully clockwise).
3. Depress Triangle FUNCTION switch and note amplitude of triangle waveform on oscilloscope.
4. Depress Square FUNCTION switch.
5. Adjust VR301 until square wave amplitude is within  $\pm 1\%$  of triangle wave amplitude.

### **Square Wave DC Offset Adjustment**

1. Pull OUT the AMPL control and set to MIN (fully counterclockwise).
2. Disconnect the OUTPUT of the 3011 from the oscilloscope and connect it to the input of the DMM.
3. Adjust VR303 for a reading on the DMM between -100 mV and 100 mV.
4. Disconnect the OUTPUT of the 3011 from the DMM and connect it to the input of the oscilloscope.
5. Push in AMPL control and set to MAX (fully clockwise).

### **Square Wave Rise and Fall Time Adjustment**

1. Depress 100 K RANGE switch and adjust FREQUENCY FOR 200 kHz.
2. Connect 50 ohm terminator to oscilloscope input.
3. Adjust VC501 for square wave rise and fall times of 100 nS or less. Overshoot must be less than 1 small increment on oscilloscope.
4. Remove 50 ohm terminator from oscilloscope input.
5. Overshoot must be less than 1 small increment on oscilloscope with oscilloscope controls set so that display is the same amplitude as in Step 3.



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